



Presented at NDE2002, to predict. assure. improve. www.nde2002.org
National Seminar of ISNT, the Indian Society for Non Destructive Testing
Hotel Taj Connemara and Raja Muthiah Hall, Chennai, 05. – 07. 12. 2002

Development of Mass-Spring Lattice Model for Numerical Simulation of Ultrasonic Testing

Hyunjune Yim

Hongik University, Seoul, Korea

Abstract

In order to model elastic solids carrying ultrasonic waves, a numerical model (on personal computers) has been developed by interconnecting mass points arranged in lattice with linear springs and rotational springs. By solving the dynamic equations for the mass points, various wave phenomena may be simulated and visualized accurately. Simulation results for wave generation, reflection, refraction, and diffraction are presented. Also, models for transmitting and receiving transducers are introduced, with their simulated radiation and reception characteristics. Finally, uses of a simulator that has been constructed from the developed numerical models in the graphic user interface environment are demonstrated.